CLAIMS

1.   A machine-implemented process for discovering a path for transferring at least one
2   data packet from a source node to a destination node through a plurality of nodes linked together
to form a network, the procedure comprising the unordered steps of:

4   (a)   sending, from the source node to at least a first one of the plurality of network
nodes, a feeler packet including feeler data identifying the destination node and node transit log
6   data identifying the source node;

(b)   sending, from the destination node to at least a second one of the plurality of
8   network nodes, a feeler packet including node transit log data identifying the destination node;
and

10   (c)   in response to the receipt of a first feeler packet at a first receiving node;

(c.1)   augmenting the node transit log in the first received feeler packet with data
12   identifying the first receiving node to form an augmented first feeler packet,

(c.2)   identifying, in the first receiving node, a second received feeler packet
14   having node transit log data identifying the destination node, and

(c.2.1) when the second received feeler packet is found, combining the
16   node transit log data from the first and second received feeler packets to represent
a path discovered for transferring at least one data packet from the source node
18   to the destination node through the network, otherwise

(c.2.2) sending a copy of the augmented first feeler packet to a second of
20   the plurality of network nodes.

2.   The process of claim 1 further comprising the step of:
2   (d)   sending, to the source node, a copy of the combined node transit log data
representing the discovered path.

3.   The process of claim 2 further comprising the steps of:
2   (e)   storing data representing the discovered path at the source node; and

(f)   repeating the feeler packet sending step (a) in response to the age of the stored
4   path data.

4.   The process of claim 2 further comprising the steps of:

2   (e)   storing data representing the discovered path at the source node; and

(f)   repeating the feeler packet sending step (a) in response to a measure of the demand

4   at the source node for a path to the destination node.

5.   The process of claim 2 further comprising the steps of:

2   (e)   storing data representing the discovered path at the source node; and

(f)   repeating the feeler packet sending step (a) in response to a measure of the cost

4   of the path represented by the stored path data.

6.   The process of claim 1 wherein the identifying step (c.2) comprises the step of:

2   identifying in the first receiving node a second received feeler packet having node

transit log data identifying the destination node as the feeler packet originating node.

7.   The process of claim 6 further comprising the steps of:

2   (d)   sending, to the source node, a copy of the combined the node transit log data

representing the discovered path;

4   (e)   storing data representing the discovered path at the source node; and

(f)   repeating the feeler packet sending step (a) in response to the age of the stored

6   path data.

8.   The process of claim 6 further comprising the steps of:

2   (d)   sending, to the source node, a copy of the combined the node transit log data

representing the discovered path;

4   (e)   storing data representing the discovered path at the source node; and

(f)   repeating the feeler packet sending step (a) in response to a measure of the demand

6   at the source node for a path to the destination node.

9.   The process of claim 6 further comprising the steps of:

2   (d)   sending, to the source node, a copy of the combined the node transit log data

representing the discovered path;

4   (e)   storing data representing the discovered path at the source node; and

        (f)   repeating the feeler packet sending step (a) in response to a measure of the cost

6   of the path represented by the stored path data.

10.   The process of claim 1 wherein the combining step (c.2.1) further comprises the

2   step of:

        (c.2.1.1)   revising the node transit log data from the first and second

4   received feeler packets to eliminate loops from the discovered path.

11.   A network apparatus for discovering a path for transferring at least one data

2   packet (114) from a source node (68) to a destination node (70) through a plurality of nodes (50,

52, 58, 62) linked together to form a network (34), the apparatus comprising:

4   means (76, 78, 80, 86) for sending, from the source node (68) to at least a first one (50)

of the plurality of network nodes, a feeler packet (122) including feeler data (126) identifying the

6   destination node (70) and node transit log data (128) identifying the source node (68);

        means (76, 78, 80, 86) for sending, from the destination node (70) to at least a second one

8   (52) of the plurality of network nodes, a feeler packet (122) including node transit log data (128)

identifying the destination node (70);

10   means (94, 96, 98), in response to the receipt of a first feeler packet (122) at a first

receiving node (50), for augmenting the node transit log (128) in the first received feeler packet

12   (122) with data identifying the first receiving node (50) to form an augmented first feeler packet

(122);

14   means (94, 96, 98, 102) for sending a copy of the augmented feeler packet (122) from the

first receiving node (50) to a second (58) of the plurality of network nodes;

16   means (94, 96, 98) for identifying, in the first receiving node (50), a second received feeler

packet (122) having node transit log data (130) identifying the destination node (70); and

18   means (94, 96, 98), in response to finding the second received feeler packet (122) at the

first receiving node (50), for combining the node transit log data from the first and second

20   received feeler packets to represent a path (72) discovered for transferring at least one data packet

(114) from the source node (68) to the destination node (70) through the network (34).

12.   The apparatus of claim 11 further comprising:

means (94, 96, 98, 132) for sending, to the source node (68), a copy of the combined node transit log data (140) representing the discovered path (72).

13.   The apparatus of claim 12 further comprising:

means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to the age of the stored path data (92).

14.   The apparatus of claim 12 further comprising:

means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to a measure of the demand at the source node (68) for a path to the destination node (70).

15.   The apparatus of claim 12 further comprising:

means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to a measure of the cost of the path (72) represented by the stored path data (92).

16.   The apparatus of claim 11 further comprising:

means (94, 96, 98) for identifying, in the first receiving node (50), a second received feeler packet (122) having node transit log data (140) identifying the destination node (70) as the feeler packet originating node (130).

17.   The apparatus of claim 16 further comprising:

means (94, 96, 98, 132) for sending, to the source node (68), a copy of the combined the node transit log data (140) representing the discovered path (72);

4   means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

6   means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to the age of the stored path data (92).

18.   The apparatus of claim 16 further comprising:

2   means (94, 96, 98, 132) for sending, to the source node (68), a copy of the combined the node transit log data (140) representing the discovered path (72);

4   means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

6   means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to a measure of the demand at the source node (68) for a path to the destination node

8   (70).

19.   The apparatus of claim 16 further comprising:

2   means (94, 96, 98, 132) for sending, to the source node (68), a copy of the combined the node transit log data (140) representing the discovered path (72);

4   means (78, 80) for storing data (140) representing the discovered path (72) at the source node (68); and

6   means (76, 78, 80, 86) for re-sending the feeler packet (122) from the source node (68) in response to a measure of the cost of the path (72) represented by the stored path data (92).

20.   The apparatus of claim 11 further comprising:

2   means (94, 96, 98) for revising the combined node transit log data (140) from the first and second received feeler packets to eliminate loops from the discovered path (72).

21.   A computer program product for use in a system for discovering a path for

2   transferring one or more data packets from a source node to a destination node through a plurality of nodes linked together to form a network, the computer program product comprising:

4   a recording medium;

6 means recorded on the recording medium for directing the system to send, from the source node to at least a first one of the plurality of network nodes, a feeler packet including feeler data identifying the destination node and node transit log data identifying the source node;

8 means recorded on the recording medium for directing the system to send, from the destination node to at least a second one of the plurality of network nodes, a feeler packet

10 including node transit log data identifying the destination node;

means recorded on the recording medium for directing the system to augment, in response

12 to the receipt of a first feeler packet at a first receiving node, the node transit log in the first received feeler packet with data identifying the first receiving node to form an augmented first

14 feeler packet;

means recorded on the recording medium for directing the system to send a copy of the

16 augmented feeler packet from the first receiving node to a second of the plurality of network nodes;

18 means recorded on the recording medium for directing the system to identify in the first receiving node for a second received feeler packet having node transit log data identifying the

20 destination node; and

means recorded on the recording medium for directing the system to combine, in response

22 to finding the second received feeler packet at the first receiving node, the node transit log data from the first and second received feeler packets to represent a path discovered for transferring

24 at least one data packet from the source node to the destination node through the network.

22.   The computer program product of claim 21 further comprising:

2 means recorded on the recording medium for directing the system to send, to the source node, a copy of the combined the node transit log data representing the discovered path.

23.   The computer program product of claim 22 further comprising the steps of:

2 means recorded on the recording medium for directing the system to store data representing the discovered path at the source node; and

4 means recorded on the recording medium for directing the system to resend the feeler packet in response to the age of the stored path data.

24.   The computer program product of claim 22 further comprising the steps of:

2   means recorded on the recording medium for directing the system to store data representing the discovered path at the source node; and

4   means recorded on the recording medium for directing the system to resend the feeler packet in response to a measure of the demand at the source node for a path to the destination

6   node.

25.   The computer program product of claim 22 further comprising the steps of:

2   means recorded on the recording medium for directing the system to store data representing the discovered path at the source node; and

4   means recorded on the recording medium for directing the system to resend the feeler packet in response to a measure of the cost of the path represented by the stored path data.

26.   The computer program product of claim 21 further comprising:

2   means recorded on the recording medium for directing the system to identify in the first receiving node for a second received feeler packet having node transit log data identifying the

4   destination node as the feeler packet originating node.

27.   The computer program product of claim 26 further comprising the steps of:

2   means recorded on the recording medium for directing the system to send, to the source node, a copy of the combined the node transit log data representing the discovered path;

4   means recorded on the recording medium for directing the system to store data representing the discovered path at the source node; and

6   means recorded on the recording medium for directing the system to resend the feeler packet in response to the age of the stored path data.

28.   The computer program product of claim 26 further comprising the steps of:

2   means recorded on the recording medium for directing the system to send, to the source node, a copy of the combined the node transit log data representing the discovered path.

4   means recorded on the recording medium for directing the system to store data representing the discovered path at the source node; and

6 means recorded on the recording medium for directing the system to resend the feeler

packet in response to a measure of the demand at the source node for a path to the destination

8 node.

29. The computer program product of claim 26 further comprising the steps of:

2 means recorded on the recording medium for directing the system to send, to the source

node, a copy of the combined the node transit log data representing the discovered path;

4 means recorded on the recording medium for directing the system to store data

representing the discovered path at the source node; and

6 means recorded on the recording medium for directing the system to resend the feeler

packet in response to a measure of the cost of the path represented by the stored path data.

30. The computer program product of claim 21 further comprising:

2 means recorded on the recording medium for directing the system to revise the node

transit log data from the first and second received feeler packets to eliminate loops from the

4 discovered path.